2.1.1.1.2.3.6 Pipelines

As part of the underground infrastructure at ISR facilities, a network of process pipelines and

cables are typically installed connecting (i) the central uranium processing facility or the satellite

facility and the header houses for transferring lixiviant; (ii) the header houses and wellfields for

injecting and recovering lixiviant; and (iii) the central plant and wastewater disposal facilities

(e.g., deep injection wells or land application areas) (NRC, 2009a). The piping and metering

system for production and injection solutions at the proposed Dewey-Burdock ISR Project will

require buried trunk lines to connect the Dewey satellite facility and its related operating

wellfield areas and the Burdock central processing plant and its related wellfields to the metering and flow distribution headers inside the header houses. Piping will also be installed to transport liquid waste streams from the Burdock central processing plant and Dewey satellite

facility to their respective wastewater disposal facilities (i.e., deep injection wells and/or land

application areas).

The applicant proposes to install up to eight underground pipelines between the Burdock central

processing plant and the Dewey satellite facility to transport various fluids used during ISR

operations (Powertech, 2011). Conduits for electronic communication and control purposes will

also be installed between the central plant and satellite facility. The plant-to-plant pipelines will

transport fluids including but not limited to (i) barren and pregnant lixiviant, (ii) restoration water,

(iii) reverse osmosis reject brines, (iv) wastewater from well drilling and maintenance operations,

and (v) supply water from the Madison Formation or other aquifers.

High density polyethylene (HDPE) pipe with heat-welded joints will be used to connect the wells,

header houses, and processing facilities; the piping is buried approximately 1.5 m [5 ft] below

grade to prevent freezing (Powertech, 2009b). Trenches containing pipelines are typically

backfilled with native soil and graded to surrounding ground topography (Powertech, 2009b).

The same procedure used in mud pit excavation during well construction will be used to

preserve topsoil; topsoil is stored separately from subsoil and replaced on the subsoil after the

pipeline ditch is backfilled.

HDPE piping to be used at the proposed project is designed to withstand operating pressures of

1135-2169 kPa {150-300 pounds per square inch [psig]}, although the applicant expects actual

operating pressures to be less than 790 kPa [100 psig] (Powertech, 2009b). At the header

house, the piping will be connected to manifolds equipped with control valves, flow meters,

check valves, pressure sensors, oxygen and carbon dioxide feed systems (injection only), and

programmable logic controllers. Sensors will measure and record pipeline pressures to monitor

for potential leaks and spills resulting from failure of fittings and valves. As the wellfield

expands, additional header houses will be constructed and connected to one another via buried

header piping. The header piping is designed to accommodate injection and production flow

rates of 7,570 Lpm [2,000 gpm] and operating pressures of 1135-2169 kPa [150-300 psig].

The only exposed pipes at the proposed project site will be at the central plant, satellite facility,

wellheads, and wellfield header houses.

From June 2011 RAI Response TR RAI P&R-13 Response 2.

Powertech proposes to install up to eight underground pipelines between the CPP and the Satellite Facility to transport the various fluids present during ISR operations. The fluids that will be transported include, but are not limited to: barren and pregnant lixiviant, restoration water, RO reject brines, wastewater resulting from well drilling and maintenance operations, and supply water from the Madison Formation or other aquifers

7.3.2 Wellfield and Pipeline Flow and Pressure Monitoring

As indicated in GEIS Section 8.3.2, the operator typically monitors injection and production well

flow rates to manage water balance for the entire wellfield. Additionally, the pressure of each

production well and the production trunk line in each wellfield header house is monitored.

Unexpected losses of pressure may indicate equipment failure, a leak, or a problem with

well integrity (NRC, 2009).

The applicant's program will include monitoring of the injection well and production well flow

rates and pressures at each header house. Individual well flow readings will be recorded during

each shift, and the overall wellfield flow rates will be balanced daily (Powertech, 2009a,b). Flow

and total volume data will be transferred to and checked automatically at the Burdock central

processing plant and Dewey satellite facility. The recovery and injection trunk lines will have

electronic pressure gauges. Information from these gauges will be monitored from each unit's

control room. The control system will have both high and low alarms for pressure and flow. If

the pressure and/or flow are out of range, the alarms will sound, alerting personnel to make

adjustments. Certain high or low readings will signal automatic shutoffs or shutdowns.

Activation of the flow alarms will prompt the applicant to take corrective actions, which include

inspections for leaks and spills.